

ASC-TR-96-1002

**ELEVATING AIRCRAFT RESCUE PLATFORM (Phase I)
PRODUCT EVALUATION REPORT**

Aeronautical Systems Center
Weapons, Air Base and Range Product Support Office
ASC/VXO
314 W. Choctawhatchee Ave., Suite 104
Eglin AFB, FL 32542-5717

12 February 1996

FINAL REPORT FOR PERIOD 14 APR 1995 - 5 JAN 1996

19960719 035

Distribution A: Approved for public release; distribution unlimited.
--

AERONAUTICAL SYSTEMS CENTER

Air Force Material Command ■ United States Air Force ■ Eglin Air Force Base

DMIC QUALITY INSPECTED 4

NOTICE

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any employees, nor any of their contractors, subcontractors, or their employees, make any warranty, expressed or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any privately owned rights. Reference herein to any specific commercial product, process, or other service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency, contractor, or subcontractor thereof. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the United States Government or any agency, contractor, or subcontractor thereof.

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise as in any manner construed, as licensing the holder, or any other person or corporation; or as conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

This technical report has been reviewed by the Public Affairs Office (PA) and is approved for public release; distribution is unlimited.

This report has been reviewed and is approved for publication.

FOR THE COMMANDER



ROBERT RETTIE
Program Manager

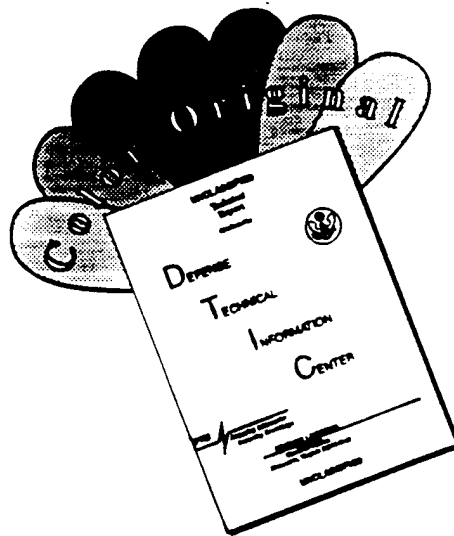
Please do not request copies from the Aeronautical System Center, Weapons, Air Base and Range and Product Support Office (ASC/VXO). Address your request for additional copies to:

Defense Technical Information Center
8725 John J. Kingman Road
Ft Belvoir, VA 22060-6218

If your address has changed, if you wish to be removed from our mailing list, or if your organization no longer employs the addressee, please notify ASC/VXO, 314 W. Choctawhatchee Ave., Suite 104, Eglin AFB FL 32542-5717, email: rettie@eglin.af.mil, DSN 872-4695, ext 311, (904) 882-4695, ext 311 to help us maintain a current mailing list.

Do not return copies of this report unless contractual obligations or notice on a specific document requires that it be returned.

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF COLOR PAGES WHICH DO NOT REPRODUCE LEGIBLY ON BLACK AND WHITE MICROFICHE.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)

2. REPORT DATE
12 February 1996

3. REPORT TYPE AND DATES COVERED
Phase I, Final, 14 Apr 1995 - 5 Jan 1996

4. TITLE AND SUBTITLE
ELEVATING AIRCRAFT RESCUE PLATFORM PRODUCT EVALUATION REPORT

5. FUNDING NUMBERS

6. AUTHOR(S)
MSgt Kevin T. McSweeney, Mr. Dave Morris, Bob Rettie, Stephen E. Kelley

PE: 64708F

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
436 CES/CEF
600 8th Street
Dover AFB, DE 19902-6600

8. PERFORMING ORGANIZATION REPORT
NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Aeronautical System Center
Weapons, Air Base and Range, Product Support Office (ASC/VXO)
324 Choctawhatchee Ave., Suite 104
Eglin AFB, FL 32542-5717

10. SPONSORING/MONITORING AGENCY
REPORT NUMBER

ASC-TR-96-1002

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited

12b. DISTRIBUTION CODE

A

13. ABSTRACT (Maximum 200 words)

Final report of the commercial technology exploitation evaluation of the Lift-A-Loft model MP25-15 Special elevating platform produced by Lift-A-Loft Corporation of Muncie, Indiana. The evaluation was conducted by the 436 CES, Fire Protection Division, Dover AFB, Delaware between 14 Apr 1995 and 5 Jan 1996. This evaluation was part of a continuing program to explore commercial off the shelf technology for application to Air Force firefighting requirements. The Lift-A-Loft model MP25-15 is a battery powered hydraulically activated scissor lift platform that can be towed, using a pintle hook equipped vehicle, to an aircraft and positioned to provide access up to 25 feet 3 inches above ground level. When the platform, with two firefighters aboard, was raised above 18 feet, it began to sway from side to side 8 to 10 inches off center. The 436th Wing Safety Office terminated the evaluation for stability and safety concerns. Investigation for a safer reasonably priced vehicle will continue for flightline firefighting/rescue capability on large frame aircraft.

14. SUBJECT TERMS

LIFT-A-LOFT; ELEVATING PLATFORM; C-5; C-17; KC-10

15. NUMBER OF PAGES

9

16. PRICE CODE

17. SECURITY CLASSIFICATION OF
REPORT

Unclassified

18. SECURITY CLASSIFICATION
OF THIS PAGE

Unclassified

19. SECURITY CLASSIFICATION
OF ABSTRACT

Unclassified

20. LIMITATION OF ABSTRACT

SAR

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18

DTIC QUALITY INSPECTED 4



DEPARTMENT OF THE AIR FORCE

AERONAUTICAL SYSTEMS CENTER (AFMC)

EGLIN AIR FORCE BASE, FLORIDA

12 Feb 96

MEMORANDUM FOR HQ AFCESA/CEXF

FROM: ASC/VXO
314 Choctawhatchee Ave., Suite 104
Eglin AFB, FL 32542-5717

SUBJECT: Elevating Aircraft Rescue Platform Product Evaluation Report
(Ref: Test Plan, 25 Jan 95)

1. PURPOSE AND BACKGROUND. The purpose of this test was to assess the effectiveness and suitability of the **Lift-A-Loft** elevating platform, model MP25-15 manufactured by Lift-A-Loft Corporation. The ability of firefighters to reach the upper level of large frame aircraft such as the C-5 Galaxy, is a continuing concern. The two recognized methods of quickly reaching the upper troop/passenger compartment are by the interior installed vertical ladder or use of a thirty-five foot ground ladder to reach the exterior of door 6 left/right. Fire and smoke conditions may preclude use of the interior ladder. Use of the exterior ladder raises numerous safety concerns, especially when the door must be opened and a fire fought while clinging to a ladder 25 feet above the ground. Neither means provides a quick effective method of extricating persons that are too badly injured to use slide chutes or vertical ladders. Other vehicles that have been used to remove injured personnel from the C-5 passenger/troop deck have been food service trucks that raise on a scissor lift, a passenger service stair truck, and a ladder fire truck. Ladder trucks are very expensive and are not authorized based upon potential aircraft rescue alone. The other vehicles are not assigned to the fire department and could be in other uses when needed for an emergency. The goal is to place firefighters into large frame aircraft and allow the lowering of injured passengers/crew members, at least 3 at a time, to the ground while accompanied by an emergency medical technician. The evaluation was managed by the 436 CES/CEF at Dover AFB, Delaware between 14 Apr 95 and 5 Jan 96.

2. SYSTEM DESCRIPTION. The **Lift-A-Loft** elevating platform is a battery powered hydraulically activated scissor lift platform that can be towed, using a pintle hook equipped vehicle, to an aircraft and positioned to provide access up to 25 feet 3 inches above ground level. The battery power is a 24 Volt Deep Cycle system with a built in fully automatic battery charger. An integral 120V AC, 60 Hz, 20 Amp electrical outlet is available on the platform if the system pigtail is attached to an AC outlet. The elevated platform is 45 by 101 inches with an Extenda-Deck™ that increases length to 149 inches. The platform has

pinned/removable guardrails and the extending portion has an aircraft bumper and aircraft interface flap. A manual override provides an emergency lowering capability in case of electrical failure. The unit weighs 3,500 lbs. and the platform capacity is rated at 1,500 lbs.

3. METHOD. The **Lift-A-Loft** elevating platform was used to conduct firefighting/ rescue training/testing on a C-5 aircraft located on row BB of the main parking ramp at Dover AFB, DE. At a height of 18 feet, the evaluation was terminated by the 436th Wing Safety Office due to the amount of sway of the horizontal platform with two firefighters aboard. Evaluation was terminated until the safety concerns could be resolved.

4. OBJECTIVES AND RESULTS. The following objectives were established to assess effectiveness, compatibility, adequacy of technical data, reliability, maintainability, and availability of the **Lift-A-Loft** elevating platform system when used to provide fire/rescue personnel access to large frame aircraft.

a. Objective E-1. Assess the effectiveness of the elevating platform system to provide timely and safe access to large frame aircraft during training and emergency response scenarios. Of special interest is the stability of the platform and the perception of personnel working on the platform while it is in the up position. The measure of effectiveness was time required to position the system and get firefighter personnel safely into the emergency aircraft. The criteria is not established. **Results:**

(1). During the initial training scenario, with a wind of 12 knots, as the platform was being raised through 18 feet with two firefighters atop, the platform began to sway side to side, 8 to 10 inches off center. The 436th Wing Safety Office terminated the evaluation. This version of the **Lift-A-Loft** trailer does not have stabilizing outriggers. This was done deliberately to minimize set-up time and reduce tripping hazards around the base of the stand. The base is 45 inches wide and 111 inches long, the outriggers would extend 25 inches on both sides and add 5 inches beyond the front and back of the unit. The pavement of the Dover AFB parking ramp varies from level up to a 2% slope (2 feet of rise over a 100 foot run).

(2). The time required to position the system varies depending upon how much equipment or spilled fuel might be in the vicinity, but would nominally require a couple of minutes. To manually position the 3,500 lb. platform near the aircraft required 6 firefighters, one third of the normal fire/rescue response contingency. The awkward body postures and movements by the personnel positioning the platform could lead to lower back injuries or strains.

(3). The parking brake system is activated by pumping a hydraulic actuator which does not provide immediate braking capability. Personnel must either hold the device in-place until brakes are engaged or wheel chocks must be positioned behind the wheels before the brake is pumped up.

(4). The 700 lb. capacity of the extend-a-deck® raised concern among the evaluators for two firemen in full turnout gear with a patient on a stretcher. The 48 inch length of the extend-a-deck® would preclude more than one firefighter and half the stretcher weight being on the extended portion at one time. The platform capacity is 1500 lbs.

b. Objective S-1. Assess the compatibility of the elevating platform system with the operational environment. Can the system provide timely response in an emergency scenario? Are there adequate vehicles in the emergency response team to tow the platform? What speed can the device safely be towed? Does it interfere with any other equipment normally used in an aircraft emergency response? The measure of effectiveness was a subjective evaluation of interoperability with other emergency response equipment and personnel. The criteria is not established. **Results:**

(1). When towed at speeds above 5 mph, the **Lift-A-Loft** would become unstable behind the tow vehicle, swaying from side to side. The slow tow speed precludes towing the platform behind any emergency response vehicle. The required response time to the ends of the Dover AFB parking ramp is 2 minutes 15 seconds and cannot be achieved at a 5-7 mph tow speed.

(2). All personnel responding to a flightline emergency are assigned essential positions on the responding vehicles. No "extra" individuals are normally available at the fire station to tow the **Lift-A-Loft** to the site of an emergency, a non-fire vehicle and driver would have to be commandeered to move the platform. This impairs the responsiveness of the system.

(3). The system was not exercised enough to determine if it interfered with any other emergency response equipment.

c. Objective S-2. Assess the adequacy of the technical data provided with the **Lift-A-Loft** elevating platform system. An operator manual was provided with the system which was appraised for general content, troubleshooting and maintenance information. The measure of effectiveness was serviceability of the elevating platform system. The criteria is that the system should operate continually without unusual maintenance and that when a malfunction occurs, the information will provide adequate instructions for USAF personnel to return the system to full operation. **Results:** The technical data provided was not totally evaluated since no maintenance or troubleshooting was required during the abbreviated evaluation period.

d. Objective S-3. Assess the reliability, maintainability, and availability (RM&A) of the **Lift-A-Loft** elevating platform system. The measure of effectiveness was serviceability of the system. The criteria is not established. **Results:** No maintenance problems were experienced by the evaluation site during the period of evaluation. The **Lift-A-Loft** elevating platform was not in service long enough to reach any conclusions about the RM&A of the system.

5. CONCLUSIONS. The **Lift-A-Loft** elevating platform, model MP25-15 is not safe for fire rescue operations. The unit evaluated, which does not use outriggers, is not stable enough to provide firefighting and rescue access for Air Force large frame aircraft, especially the C-5 door 6 left/right. Manning is not sufficient to provide fire department personnel to tow the system to an emergency response scene, especially at the 5-7 mph recommended by the manufacturer. Positioning of the **Lift-A-Loft** is laborious, makes personnel susceptible to strains or lower back injuries, and does not provide a rapidly applied braking capability.

6. RECOMMENDATIONS. The **Lift-A-Loft** elevating platform, model MP25-15 should NOT be procured for fire rescue operations on large frame aircraft. Further investigation is necessary to find a safe reasonable cost vehicle or device to provide flightline firefighting/rescue capability on large frame aircraft such as the C-5, C-17, KC-10 and Civilian Reserve Air Fleet (CRAF) counterparts. The optimum solution could be a towed vehicle, a self motorized vehicle, or a mechanism on a flightline fire rescue vehicle.



ROBERT RETTIE
Program Manager

Attachments:

1. Equipment Photographs.
2. Distribution.

HQ AFCESA/CEXF

20 Jan 96

Concur/~~non-concur~~ with the recommendations in this report.



JAMES W. HOTELL
Chief, Fire Protection Division

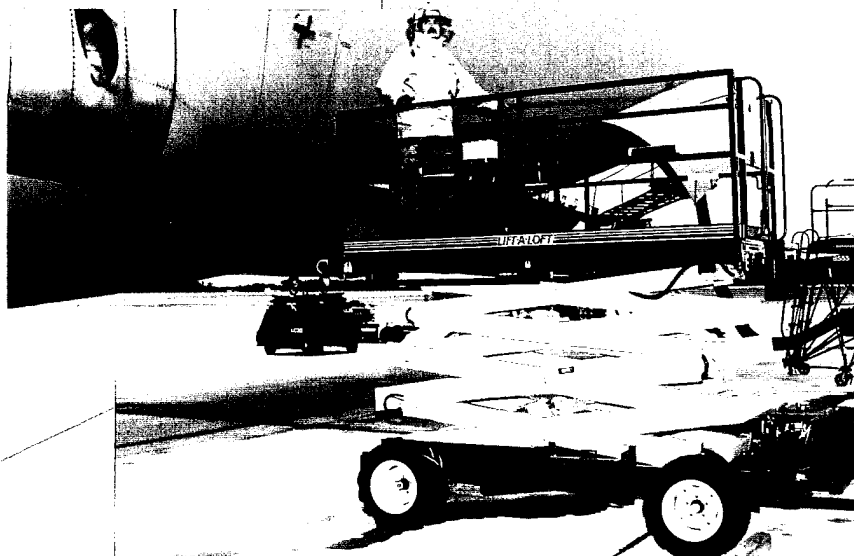
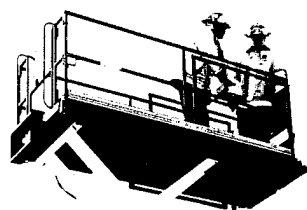
EQUIPMENT PHOTOGRAPHS



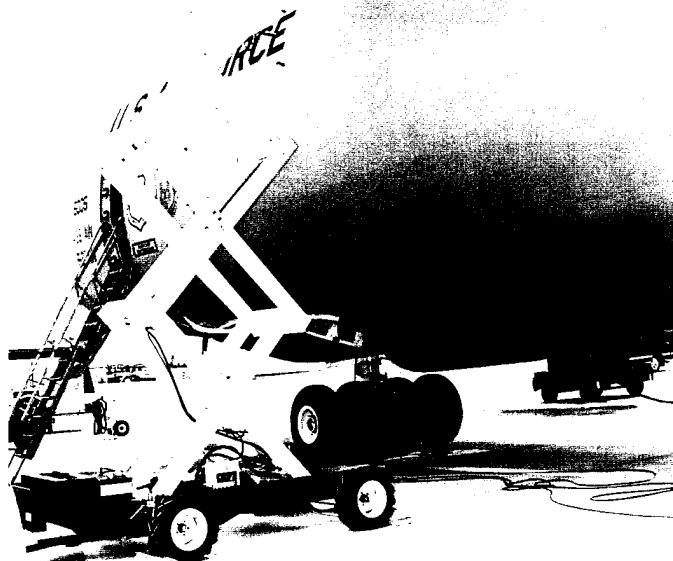
Manual maneuvering
Lift-A-Loft into position



Initial extension
from platform controls



Lift-A-Loft near
full extension



DISTRIBUTION ASC-TR-96-1002

Eglin AFB offices:

ASC/VXO	4
AFDTC/PA	1
WL/MNPM (Technical Library)	1

Defense Technical Information Center	2
Attn: DTIC-DDAC	
8725 John J. Kingman Road	
Ft Belvoir, VA 22060-6218	

436 CES/CEF	1
Attn: Jesse Flanders	
600 - 8th Street	
Dover AFB, DE 19902-6600	

AFCESA/CEXF	1
Attn: Jim Hotell	
139 Barnes Drive, Suite 2	
Tyndall AFB, FL 32403-5323	

WR-ALC/LVV	2
Attn: Sharon Edwards & Mary Zampa	
225 Ocmulgee Court	
Robins AFB, GA 31098-1647	

ANG/CEXF	1
3500 Fetchet Ave.	
Andrews AFB, MD 20762-5157	

HQ ACC/CEXF	1
Attn: Randy Caratachea	
129 Andrews St., Suite 102	
Langley AFB, VA 23665-2769	

HQ AETC/CEOX	1
Attn: Fire Protection Manager	
266 F Street West	
Randolph AFB, TX 78150-4321	

HQ AFMC/CEOO	1
Attn: Jim McKay	
4225 Logistic Ave., Suite 7	
WPAFB, OH 45433-5739	

HQ AFRES/CEXF	1
Attn: Donald Warner	
155 Second Street	
Robins AFB, GA 31098-1635	

HQ AFSOC/CEF	1
Attn: CMSgt Marshall	
204 Bennett Ave.	
Hurlburt AFB, FL 32544-5270	

HQ AFSPC/CEPX	1
Attn: Sandi Sanchez	
150 Vandenberg St., Suite 1105	
Petterson AFB, CO 80914-4150	

HQ AMC/CEOO	1
Attn: Duane Morgan	
507 A Street	
Scott AFB, IL 62225-5022	

HQ USAFA/CEF	1
Attn: Richard Duncan	
9224 Airfield Drive	
Air Force Academy, CO 80840-2080	

HQ USAFE/RSIXF	1
Attn: Ray Porter	
Unit 3050, Box 10	
APO AE 09094-5010	

HQ PACAF/CEOO	1
Attn: CMSgt Soto	
25 E Street, Suite D-306	
Hickam AFB, HI 96853-5412	

Total Copies:	23
---------------	----